***CAT I***

Q1) Find the inverse of the matrix given by:

Q2) Evaluate the double integral

Q3) Use crammers rule to solve the following pairs of simultaneous equations

Q4 ) State the three basic components of a linear programming problem giving an example.

Q5) Determine the derivative of the given function:

(5mks)

Q6) State and explain briefly the assumptions of linear programming.

Q 7) Given that the matrix below is singular , find the possible values of

***CAT II***

Q1A farmer has of land on which to plant maize and beans. He has a work force of and it takes to work on of maize and to work on 1 ha of beans. He has a capital of and 1 ha of maize requires $ 50 to cultivate while 1 ha of beans to cultivate. Suppose that the farmer wishes to maximize the profit and the profit per ha is maize and for beans. Set up a linear programming problem and solve it graphically (sketch the graph in the answer booklet, graph paper not necessary) .

Q2) Given two matrices

and

Find the matrix

Q3) Find the integral of the following function given as :

Q4) Define the following terms as used in quantitative methods:

Row vector

Transient analysis

Markov analysis

Chain rule of differentiation

Steady state

Q5) Let X, Y and Z be firms in a soft drink market with the following transition matrix:

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Let a, b and c be the corresponding market shares of firms X, Y and Z respectively. Determine the long term market share for each firm.